

Notice of Allowability

Application No.

10/065,331

Examiner

John H. Le

Applicant(s)

BONANNI ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Applicant's amendment filed 07/11/2005.
2. ☒ The allowed claim(s) is/are 1-5, 7-24, 26 and 29-32.
3. ☒ The drawings filed on 02 December 2002 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

Response to Amendment

1. Applicant's amendment filed 07/11/2005 has been entered and carefully considered.

Claims 6, 25, and 27-28 have been canceled.

Reasons for Allowance

2. Claims 1-5, 7-24, 26, 29-32 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Please see the previous office action and applicant's argument filed on 03/22/2004, 07/27/2004, 11/29/2004, 04/19/2005, 06/09/2005, and 07/11/2005.

Regarding claim 1, none of the prior art of record teaches or suggests the combination of a method for detecting precursors to compressor stall/surge, wherein the method comprising steps of: monitoring at least one compressor parameter to obtain raw data representative of said at least one compressor parameter; pre-processing said raw data using a frequency demodulator to produce pre-processed data comprising at least one demodulated signal having an amplitude corresponding to the instantaneous frequency of a locally dominant component of an input signal; post-processing said pre-processed data using a Kalman filter to obtain stall precursors. It is these limitations as they are claimed in the combination with other limitations of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Regarding claim 5, none of the prior art of record teaches or suggests the combination of a method for detecting precursors to compressor stall/surge, wherein the method comprising steps of: monitoring at least one compressor parameter to obtain raw data representative of said at least one compressor parameter; wherein said monitoring comprises sampling and digitizing signals representing said at least one compressor parameter to obtain time-series analyzed data; pre-processing said raw data using a frequency demodulator to produce pre-processed data, said pre-processing being at least partially performed in the digital domain; post-processing said pre-processed data using a Kalman filter to obtain stall precursors.. It is these limitations as they are claimed in the combination with other limitations of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Regarding claim 11, none of the prior art of record teaches or suggests the combination of method for detecting precursors to compressor stall/surge, wherein the method comprising steps of: monitoring at least one compressor parameter to obtain raw data representative of said at least one compressor parameter; pre-processing said raw data using a frequency demodulator to produce pre-processed data, said preprocessing being performed at least partially in the analog domain, wherein said pre-processing comprises producing a demodulated signal having an amplitude corresponding to the instantaneous frequency of a locally dominant component of an input signal; and post-processing said pre-processed data using a Kalman filter to obtain stall precursors. It is these limitations as they are claimed in the combination with

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other limitations of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Regarding claim 23, none of the prior art of record teaches or suggests the combination of a system for detecting precursors to compressor stall/surge comprising: at least one sensor positioned at said compressor to monitor at least one compressor parameter, said at least one sensor outputting raw data representative of said at least one compressor parameter; a frequency demodulator receiving said raw data, demodulating said raw data, and producing demodulated data; a Kalman filter obtaining stall precursors from said demodulated data; and a calibration system for sampling and digitizing output from said at least one sensor to obtain time-series analyzed raw data. said frequency demodulator receiving said time-series analyzed raw data. It is these limitations as they are claimed in the combination with other limitations of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Regarding claim 32, none of the prior art of record teaches or suggests the combination of a system for detecting precursors to compressor stall/surge comprising: at least one sensor positioned at said compressor to monitor at least one compressor parameters said at least one sensor outputting raw data representative of said at least one compressor parameter; a frequency demodulator receiving said raw data. demodulating said raw data and producing demodulated data; a Kalman filter obtaining stall precursors from said demodulated data; and a stall precursor measure system computing a standard deviation of innovations of said Kalman filter to determine a stall

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precursor signal. It is these limitations as they are claimed in the combination with other limitations of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John H Le whose telephone number is 571-272-2275. The examiner can normally be reached on 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E Barlow can be reached on 571-272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

FL

John H. Le

Patent Examiner-Group 2863

July 18, 2005


MICHAEL NGHIEM
PRIMARY EXAMINER